

Appl. No. 10/687,760

Amdt. dated May 13, 2005

Reply to Office action of December 13, 2004

Remarks:

Claims 1-14 are pending in this application.

The Examiner has rejected formerly pending claims 1-11 as obvious under 35 U.S.C. 103(a) in view of U.S. Patent No. 6,087,739 to Jalliffier et al. (hereinafter "Jalliffier") and U.S. Patent No. 3,697,810 to Wilson et al. (hereinafter "Wilson").

Specifically, the Examiner appears to rely on Jalliffier as illustrating the distribution of three-phase power on a train, and on Wilson to illustrate ground fault detectors used in three phase system. The Examiner then concludes that the claimed invention is an obvious combination of Jalliffier and Wilson.

The applicant respectfully disagrees. Specifically, in order to establish that any claim is obvious the Examiner must identify 1) all of the claimed elements in the prior art; 2) a reason or motivation to modify or combine these elements to arrive at the claimed invention; and 3) a reasonably likelihood of success (See M.P.E.P. 2141). It is submitted that the Examiner has failed to establish these conditions.

Here, it is submitted that the Examiner has failed to establish knowledge of all of the claimed elements in the cited art, nor a motivation to combine the elements.

As claimed in claim 1, ground fault detection is performed at each car by sensing net current tapped at each car. As Jalliffier fails to disclose a ground fault circuit, Jalliffier also fails to disclose where within a train ground faults are to be detected. Similarly, as Wilson is not specific to trains, Wilson also fails to disclose or suggest where within a train, ground faults are to be detected. A mere combination of Jalliffier and Wilson, as suggested by the Examiner, would lead a person of ordinary skill to detect a ground fault at the generator, rather than at each car. This would be cost efficient, and would protect the ground faults on multiple cars. Indeed, the Applicant has admitted to the existence of a ground fault sensor at the locomotive end of a power distribution network with a locomotive-based generator.

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This, however, creates the problem recognized by the applicant: that isolation of the fault is cumbersome and requires systematic disconnection of each car from the network until the location of the fault is isolated. This is exacerbated in a resistively grounded multi-phase system that can tolerate multiple ground faults. This problem is simply not recognized by Jalliffier or Wilson. A person of ordinary skill would thus simply not find any motivation to modify or combine Jalliffier or Wilson to arrive at the solution proposed by the applicant namely detection of ground faults at individual cars.

In fact, close examination of Jalliffier reveals that although Jalliffier includes a locomotive and a plurality of train cars, the generator of Jalliffier described from column 2 line 58 to column 3 line 5 is situated at one of the cars, the so-called "intermediate" car, and only provides power to immediately adjacent cars. An electronics box (30) at the intermediate car includes a voltage step down means to convert single-phase high voltage electricity, received from a stationary power supply unit (16) or from a power source (51) on board the locomotive, to so-called low voltage three-phase electricity. Box (30) provides the low voltage three-phase electricity to cars immediately adjacent to the intermediate car through electrical wiring harnesses on the adjacent cars. In particular, a low-voltage line is disposed between low-voltage terminals provided at the leading end and at the trailing end of the intermediate car, as well as at the leading end of the trailing car and at the trailing end of the leading car (see column 5, lines 30-34). For trains having more than three cars, multiple boxes (30) appear to be used – see FIG. 2.

Fault isolation in the network of Jalliffier would thus require, at most, two disconnections. That is, if a disconnection of the leading car from the Intermediate car does not isolate the fault, the trailing car may be disconnected from the intermediate car. The problem identified and solved by the applicant, namely the isolation of faults in a train, is thus simply not present in the system of Jalliffier. Jalliffier would thus simply not lead a person of ordinary skill to the claimed invention.

Moreover, the Examiner has not provided any other reason or motivation in the art to modify the system of Jalliffier to add the ground fault sensor

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provided by Wilson to detect ground faults at each car, to arrive at the claimed invention. Withdrawal of the rejection of claim 1 and claims 2, 3 and 4, dependent thereon, and allowance of these claims are therefore respectfully requested.

Claim 5 has been amended to further clarify that each car includes a ground fault sensor. Consequential and clarifying amendments have been made to claims 6 to 8. For the reasons set out above, it is believed these claims, too are in condition for allowance.

Finally, new claims 12-14 are presented for consideration by the Examiner. Again, it is believed these claims too are in condition for allowance.

No new matter has been added by these amendments.

In view of the foregoing, favorable consideration and allowance of the application are earnestly solicited.

Respectfully submitted,



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